SHOW-ME YARDS AND NEIGHBORHOODS ADDRESSES NON-POINT SOURCE POLLUTION

As we progress in successfully addressing point-source water pollution and nutrient loading, it becomes increasingly more apparent that pollutants and nutrients from non-point sources must also be reduced significantly in order to bring about the improvements and protection of our water quality for which we are working. As a bit of reference, non-point sources may include run-off from areas such as construction sites, parking lots, and other impervious surfaces, agricultural sources, and residential or business lawns. Point sources are those larger sources easy to "point" to, such as municipal treatment plants.

Show-Me Yards and Neighborhoods (SMY&N) is a program to address non-point source pollution – specifically nutrient run-off from lawns – commercial, institutional, or residential.

SMY&N is a part of Choose Environmental Excellence and dovetails very nicely with the basic components of the Choose Environmental Excellence program:

- Acknowledge we all make an impact on the environment
- Encourage education to raise awareness and give solutions
- Ask that people consider the environment in their everyday choices and ***Choose Environmental Excellence***

SMY&N is a program developed to address residential or business lawns. Education and outreach activities are designed to increase awareness of the significant role lawns play in the total amounts of nutrients and pollutants that reach our rivers, streams, and lakes. In addition to creating awareness, solutions are provided, as well as recognition incentives for homeowners, lawn care providers, and neighborhoods that put the practices to work. Assistance with best management practices is available for builders, developers, and landowners. Stream monitoring activities will provide information about the effect of the activities.

The large number of partners participating in SMY&N is indicative of the broad base of support and interest in protecting our water quality.

Homeowners' workshops are available. Homeowners are encouraged to follow best management practices and can choose from a checklist to earn points or "inches." Reaching 36 inches earns an attractive "Show Me Yard" sign.

Lawn care professionals' workshops are tailored to the business' needs. Benefits for both the businesses and their customers are emphasized: sharing the relationship-building information; enabling the businesses to position themselves as responsible, caring professionals; utilizing the information to set themselves apart from other businesses.

SMY&N displays and homeowner seminars have appeared in the Home Show and at the Lawn and Garden Show since 2001. Several Lawn Care Field Days have been held.

Homeowners, contractors, and other professionals associated with lawn care are encouraged to participate in Show-Me Yards & Neighborhoods.

For more information or to access the reference materials mentioned in this publication, please visit:
www.muextension.missouri.edu/explore
www.springfieldmogov.org/showmeyards

Show-Me Yards & Neighborhoods is a project of Springfield/Greene County *Choose Environmental Excellence*

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SHOW-ME YARDS & NEIGHBORHOODS

Cool-Season Grasses Lawn Care and Maintenance Calendar

Lawns may be maintained at different levels of quality according to individual preference, but good lawns seldom "just happen." This summary outlines major steps required to maintain a year-round high-quality lawn.

The practices refer primarily to cool-season grasses, such as Kentucky bluegrass, perennial ryegrass, tall fescue, and fine fescue. For bermudagrass and zoysiagrass lawns, see MU publication *G 6706, Establishment and Care of Zoysiagrass Lawns.*

Timing is approximate for Southwest Missouri; it may vary two weeks or more depending on weather conditions.

March

Organic practices

- As ground temperatures near 50 degrees F, (March or April) apply Corn Gluten (60% protein) for early pre-emergent control or if weeds are not a consideration, this would be an appropriate time to apply a general organic fertilizer.

Non-organic practices

- As needed, start mowing at recommended heights (see Table 1).
- Use broadleaf herbicides for perennial and winter annual weeds not controlled in the fall.
- Overseed thin spots early if missed last fall. (Do not overseed with perennial or annual ryegrass.) Do not use herbicides in overseeded areas until grass is fully established.
- Watch for moles; traps are the only effective means of control.

April/May

Organic practices

- Second application of Corn Gluten 45 - 60 days following the first application. This is the most important application to prevent weed seed germination.
- Best time for Beneficial Nematode application to control grubs at larval stage. Apply during rainy, cool weather.
- Control broadleaf weeds by hand pulling or spot treatment with Horticultural Vinegar.

Non-organic practices

- Aerate if thatch is 1 inch deep or soil is compacted.
- Use crabgrass preventers (preemergence herbicides) by April 1st. Start top-dressing low spots as grass grows.

Rx *Your Prescription For A Healthy Yard!*

Show-Me Yards & Neighborhoods is an educational program designed to raise awareness about the role urban storm water runoff plays in the water quality of nearby streams, creeks, rivers, and lakes. Through voluntary educational activities, SMY&N offers environmentally responsible alternatives to traditional lawn care and construction practices that contribute to the runoff of contaminants and excess nutrients. SMY&N also recognizes and commends individuals and professionals who put the SMY&N techniques into practice – homeowners can earn an attractive yard sign and professionals can become certified.

For more information:

Show-Me Yards & Neighborhoods (417) 864-2006 www.springfieldmogov.org/showmeyards

- In May, fertilize if needed when spring growth begins to slow. Use a slow-release form of nitrogen, such as polymer- or sulfur-coated urea, urea formaldehyde, or a natural organic to improve lawn quality without promoting excessive leaf growth.
- Apply postemergence broadleaf herbicides for control of summer annual weeds. If needed, start postemergence control of crabgrass, goosegrass, or nutsedge near the end of May. (See *G 6750, Home Lawn Weed Control.*)
- Watch for first brood of sod webworm. Apply insecticides about 10 days after major moth flight if damage to turf is seen, generally in May.

June/July

Start watering as needed. Water infrequently to a soil depth of 6 inches. Overwatering can be harmful, but water frequently enough to prevent drought stress. Kentucky bluegrass under stress is susceptible to disease. Don't start watering if you cannot continue full season. Rapidly growing lawns need frequent mowing. Let clippings remain unless they are excessive.

Organic practices

- Apply all-purpose organic fertilizer to slowly feed plants through summer.

Non-organic practices

Continue frequent mowing as needed and irrigate only enough to prevent turf wilting. When irrigation is needed and conditions are hot and humid, water between 6:00 a.m. and 10:00 a.m. to reduce disease occurrences.

- Search for white grubs in brown areas. Dead turf in those areas can easily be peeled from the surface. If 5 to 10 grubs appear in 1 square foot, treat with an appropriate insecticide near the end of July. Thoroughly irrigate to move the insecticide into the zone where grubs are active.
- Apply second application of preemergent herbicide for crab grass control in June.

August/September

Organic practices

- If lawn renovation is necessary, begin preparation. Remove weeds by mechanical control, cover with plastic, or spray with Horticultural Vinegar.
- Early to mid September, seed with high quality blend when adequate rains or irrigation are available.
- Apply Corn Gluten mid September to stimulate fall growth. If seeding, delay application until second mowing of new grass. This is the most important time to build soil fertility through use of organic fertilizer.

Non-organic practices

- Fall seeding and sodding is best; prepare seedbed now. Continue watering and insect control, if necessary. Make plans for fall lawn renovation. Select and purchase grass seed and fertilizer. If lawns are to be totally renovated, kill all vegetation with a glyphosate (Roundup®) application near midmonth.
- Have soil test performed if you are unsure of basic fertility level.
- Thoroughly water dormant lawns in last week of August to start fall growth.
- Apply selective broadleaf herbicide no later than one month prior to new seeding. If needed, broad leaf herbicide may be applied to newly established lawns after the second mowing.
- September is an important time to fertilize. Apply 1-1.5 pounds nitrogen per 1,000 square feet.
- Plant or seed new lawns in early September through mid-October; keep well watered.
- Core aeration prior to over seeding prepares the seed bed and relieves compaction.
- Rake; dethatch; kill weed patches; overseed thin spots. Resume top-dressing, if needed.

October/November

Non-organic practices

- This is the best time to apply broadleaf herbicides, especially for chickweed control.

succulent grasses are simple lawn-grooming practices that may reduce diseases.

Two major insect pests are white grubs and sod webworm. White grubs are described in MU publication *G 7200, White Grubs in the Lawn.* Treating lawns every year with insecticides to prevent insect infestations is neither necessary nor advised.

Routine inspection of the lawn for white grubs and sod webworms is advised. Treat only after the insects have been properly identified, and only when they are in sufficient numbers to cause turf damage.

Organic Pest Controls

Horticultural Vinegar (20% acidity) An alternative to toxic herbicides may control many broad leaf weeds and grasses. Ineffective in controlling Bermuda grasses or other large root system plants.

Beneficial Nematodes may enhance grub control during larva stage and is most effective when applied during spring. Care must be taken during application, as this is a living organism. Also helpful in controlling fleas, ants, termites, and many other ground pests.

Garlic & Hot Pepper work great as insect repellants.

Orange Oil (de-lymenine) orange peel extract insecticide.

Renovation

If your lawn is less than acceptable but contains at least 40 percent desirable grasses, you may be able to replant without preparing a completely new seedbed. Start in August with steps similar to the following:

- Kill weeds and undesired grasses with appropriate herbicides or practices. (If only annual weeds are present, skip this step.)
- Remove dead vegetation and prepare seedbed with vertical renovating machine or heavy rake, set deep enough to bring soil to the surface. Clear off all debris.
- Now is an excellent time to incorporate organic matter, if needed.
- Add fertilizer and lime according to soil test and rake in. In late August or early September, scatter seed of desirable variety and drag or rake into loosened soil surface.
- Water thoroughly and treat as a newly seeded lawn.
- If the original problem was due to soil itself, poor drainage, or excessively thick thatch, till the lawn and start over following steps for establishing a new lawn. (See MU publication *G 6700, Cool-Season Grasses: Lawn Establishment and Renovation.*)

Safe Handling of Chemicals

If chemicals are used, handle them responsibly. For more information, see MU publication *G 7520 Pesticides and the Environment.*

- Understand the problem you are trying to remedy. Avoid a "one size fits all" approach. Target the insect or disease specifically. Learn the lifecycle to find the time when the pest is the most vulnerable - that will be the time the least amount of chemical is the most effective.
- Choose the correct pesticide - the one with the lowest toxicity that will safely and effectively control the pest. Read the label carefully. Obey all cautions. Do not use the chemical for uses or in mixtures other than specified on the label.
- Before applying the chemical, examine the area to be treated to determine if there are plants, animals, or pets that could be harmed by the pesticide. Avoid spraying on windy days.
- Wear protective gear indicated on the label. Don't eat, drink, or smoke when using pesticides. Avoid wearing soft contact lenses when using pesticides.
- Buy only the amount you will use. Avoid having large supplies of pesticides on hand. Store pesticides in their original containers with the original labels visible and intact. Mark the date on the containers and use the oldest first.
- Dispose of chemicals properly. Do not flush them down the toilet or down the sink. Do not pour them out on the ground or down a storm drain.

Citizens of Springfield and Greene County may bring their chemicals to the City's Household Chemical Collection Center. Citizens of surrounding counties may call the City's Recycling Hotline (864-1904) for information about collections in their county.

a:Lawn Maintenance Calendar/BL#1/wp

or 4:1:2 at the recommended rate according to the Lawn Maintenance Schedule.

Where soil test indicates low phosphorus or potassium levels or where basic fertility levels are not known, use fertilizer with a ratio that more closely approximates 1:1:1 or 2:1:1 or 3:1:2. If lawn application rates are not given on the container, amounts to apply can be calculated as in the example above.

Lime

Do not apply lime routinely to established lawns unless a soil test indicates a need. Excess can be as harmful as deficiency. Established lawn soils seldom need to be limed unless a soil test indicates a moderately to severely acid soil of pH 5.5 or lower.

Where lime is needed, apply finely ground or specially pelletized agricultural limestone at rates up to 50 pounds per 1,000 square feet. If more is required, make separate applications about six months apart. Limestone can be applied almost any time, but fall or early winter is the best time.

Organic Fertilization

Corn Gluten (60% protein) 9% nitrogen rich slow release fertilizer. Unique growth inhibitors present prevent root hairs from newly germinated seeds from being able to take up moisture; thus the seed withers and dies.

General Application Rates for Corn Gluten & Organic Fertilizer:

- 20 lbs. per 1,000 sq. ft. while building soil fertility and turf density.
- 10 lbs. per 1,000 sq. ft. for maintaining healthy turf.

Compost:

- Apply one-quarter to one-half inch compost any time grass is actively growing as a soil conditioner.
- Spread over grass seed as a moisture retentive mulch during the critical germination period.
- Core aeration prior to adding compost allows organic matter to be worked into existing turf areas.

Mowing

Mowing height and frequency directly affect lawn quality. The common practice of mowing a lawn short, under the assumption it will require less frequent cutting, is responsible for much lawn deterioration.

If cut too closely, there is not enough leaf surface to manufacture necessary foods for balanced growth. For this reason, a standard guide is to never remove more than one-third of the green leaf area with a single mowing. If a mowing is missed, cut only half the way back to the intended heights, then re-mow in a couple of days to regular level. Recommended mowing heights are presented in Table 1. On the other hand, allowing the grass to get too tall necessitates removal of more than 1/3 of the leaf area and contributes to thatch build-up.

Table 1. Recommended mowing heights for cool-season grasses in Missouri.

Turfgrass	Mowing heights (inches)[1]
Tall fescue	2.5-3.5
Kentucky bluegrass	2.0-3.0
Perennial ryegrass	2.0-2.5
Creeping red fescue	2.0-3.0
Chewings fescue	2.0-3.0
Hard fescue	2.0-3.0
Sheep fescue	2.0-3.0

[1]Mowing heights may be adjusted according to climatic conditions, level of maintenance, and intended use.

Clippings seldom need to be removed. With proper mowing, clippings filter down to the soil surface, decay and recycle nutrients back to the soil. Remove clippings when they remain on the surface or when excessive thatch is already causing a problem.

- Keep blade sharp.
- Mow often when actively growing.
- Mow at or above 3-inch height.
- Mulch clippings to return organic matter and nutrients to the soil.
- Remove excess clippings to compost.
- Mowing “tall”
  - Inhibits weed seed germination.
  - Shades soil and prevents water loss through wind and sunlight exposure.
  - Slows water runoff and prevents soil erosion.
- Mow when grass is dry to prevent spread of fungal disease and improve quality of cut.
- Don’t mow following wet periods, as this tends to promote soil compaction and disease.

Watering

Kentucky bluegrasses, fescue, and other cool-season grasses naturally protect themselves by going into a semidormant stage during periods of high temperature or drought. They cease growth and turn brown, but bounce back quickly with sufficient water and cooler temperatures.

Except in cases of extreme prolonged drought, tall fescue and Kentucky bluegrass do not need water to stay alive during the summer. However, their appearance suffers. During dormancy, drought-tolerant weeds such as plantain, thistles and dandelion dominate lawns.

Because of a deep, extensive root system, tall fescue remains green longer into the summer than other nonirrigated cool-season grasses.

Kentucky bluegrass has many underground stems, called rhizomes. Each rhizome can produce several new bluegrass shoots that result in turf thickening in autumn when water becomes available following summer dormancy.

The principal purpose of summer watering is to maintain an attractive green surface. Watering will not substitute for poor fertility or improper mowing. Extra growth stimulated by watering increases fertility requirements and potential disease pressure.

If you cannot give attention to management, allow the turf follow its natural tendencies to go dormant during summer except during excessive drought conditions when loss of turf can occur. Plants are brown in appearance from lack of water, but not necessarily dead. (See Watering Guidelines.) Homeowners who have a lawn care service should not allow their lawn to enter drought dormancy.

Watering Guidelines

- Shallow, frequent sprinkling to add a little water each day is not generally recommended. It encourages shallow, weak roots, crabgrass, and some diseases. Irrigate to the full depth of the root system often enough to prevent wilting. (See MU publication *G 6720, Home Watering Guide.*)
- Kentucky bluegrass and fine leaf fescue roots may not reach depths greater than 4 to 6 inches during the summer. About 1 inch of water (620 gallons per 1,000 sq. ft) can be stored in an average Missouri soil to this depth, and this should last about a week. A reasonable guideline for summer lawn irrigation is to apply enough water in addition to natural rainfall to total 1 inch per week. Greater frequency with lesser water amounts may be required on sandy soils due to less water holding capacity.
- Don’t guess at how much water is being applied to reach the desired wetting depth. Place tall, straight-sided cans in the sprinkler pattern. Measure water depth in the cans to determine the amount of water applied.
  Thrust a small probe (screwdriver) into the soil. Decreased resistance to the probe in wetted soil can help gauge depth of wetting.
- Some sprinklers apply water faster than soil can absorb it. Few established lawn soils in Missouri can absorb 1/2 inch per hour; many absorb much less. To prevent waste, move portable sprinklers frequently. Properly engineered permanent irrigation systems with timing controls for “interval watering” do the best job.
- Steep slopes, hard spots, and hot areas require special attention. Mechanical aeration, extra slow watering, and use of wetting agents may help water infiltration.
- Watering deeply and infrequently increases root depth and promotes drought tolerance.
- Watering in the morning is most efficient and promotes a healthy turf.
- Water to point of run off. Allow water to soak in and then re-irrigate for deep soaking. This allows you at least a week between watering intervals.
- Allowing soil surface to dry between watering inhibits fungal disease and weed seed germination.

Aeration

On clay- or silt-type soils, or any turf receiving constant traffic, soil surface sealing and compaction can seriously impair turf growth. Grass roots are injured because air, water, and fertilizers cannot reach them in sufficient quantities. Mechanical aeration to reduce compaction is essential for continued turf health.

Aeration is best done by power equipment that pulls out small cores of soil. Power equipment is usually available at rental stores. Lawn care companies may also provide these services to their customers.

For small areas, suitable hand equipment is available, but using it is hard work. Even a spading fork plunged into the soil at 3-inch intervals when the soil is lightly moist — not wet — is far better than nothing at all.

Aeration should be done at least once a year where compaction is a problem. Fall is the best time for Kentucky bluegrass and tall fescue lawns, but aeration will be highly beneficial anytime the grass is actively growing and is not under heat and drought stress.

Thatch Control

Thatch is a layer of undecayed and decayed plant parts at the soil surface. It forms a barrier to water and air movement in the manner of a thatched roof.

Thatch is primarily a result of intense fertilization and improper mowing techniques. These practices promote excessive lateral growth of stems (stolons and rhizomes) and shallow roots; these shallow stems and roots are the main cause of thatch because they are resistant to decay. Properly mulched leaf clippings decay readily and do not contribute to thatch. Aggressive species, like Kentucky bluegrass and bermudagrass, and those that produce plant tissues resistant to decay, like zoysiagrass, are prone to thatch.

Thatch removal should be initiated whenever accumulation exceeds 1/2 inch. Early fall is the preferred time for dethatching cool season lawns.

Note-- the use of organic fertilizer promotes the necessary biological activity which will digest the thatch in less than one year, provided no toxic chemicals are used which suppress the biological activity.

For additional information on thatch, see MU publication *G 6708, Thatch — Enemy of Lawns.*

Top-dressing

Top-dressing is the periodic addition of a thin layer (1/4 to 1/2 inch) of soil or compost to the surface of growing turf. Top-dressing to mix soil with accumulating plant debris hastens thatch decay. Shallow depressions in turf can be gradually leveled by this practice as well.

Top-dressing may be done immediately after coring, dethatching, or slicing. Never bury the existing turf with too much top-dressing soil. After top-dressing, at least three-fourths of the grass plant should be exposed to sunlight.

For additional information on compost, see MU publication *G 6956 Making and Using Compost.*

Rolling

Rolling is not desirable for smooth, even lawns. Surface compaction is common in many lawns without adding to the problem by heavy rolling. Rolling moist soil causes maximum compaction.

When late winter freezing and thawing have resulted in "heaving" young plants out of the ground, or if mole activity is serious, rolling may be required. In such cases, roll soon after spring thaw when the soil surface is relatively dry, and use as light a roller as possible. Don't roll more than is absolutely necessary.

Weed Control

The best weed control is a healthy, dense, competitive turf.

Chemical weed killers are useful, but should not be relied upon entirely to cure lawn weed problems. (See *MU publication G 6750, Home Lawn Weed Control.*) Suggestions for timing herbicide application for several common weed problems are indicated in the calendar of this guide.

Relative merits of using fertilizer-herbicide (weed and feed) or fertilizer-insecticide combinations should be considered carefully before they are used indiscriminately. In many cases, at least one of the ingredients may not be needed or will be used at an inappropriate time.

Disease and Insect Problems

Prevention is the best approach to disease problems in home lawns. Often by the time the disease is diagnosed, the damage has been done.

Controlling thatch, avoiding frequent, light irrigation, and proper fertilization for healthy but not

- Mow at regular heights until growth stops; mulch tree leaves into turf unless quantity prohibits. Keep leaves from packing and smothering grass.
- Apply lime if soil test indicates need.
- Fertilize moderately by applying 1 pound of nitrogen per 1,000 square feet after cool days slow leaf growth. Nutrients at this time will encourage root growth and thickening of turf. Soluble nitrogen fertilizers (containing urea, ammonium nitrate or ammonium sulfate) are used more efficiently by turf in late fall.
- Irrigate, if necessary, so that turf goes into winter with moist — not wet — soil.
- Recondition lawn mower; store with clean oil. Use soluble fertilizer or calcium chloride instead of salt for melting winter ice.

November/December

Organic practices

- Application of organic fertilizer as winterizer.

Reference Information

Fertilization

The basis of a good fertility program begins with a soil test. Soil testing is recommended at least every three years. A fertility program can be established to meet your turf needs based upon soil test results.

The lawn will absorb only what it needs to maintain growth. Any excess fertilizer is wasted and can easily become run-off, contributing to excess nutrient problems in area lakes and streams. Urban lawn run-off is a major contributor to excess algae growth caused by these nutrients.

In the past, too much emphasis has been given to spring as the best time to fertilize cool season grasses. If a lawn is stunted and has a pale to yellowish green appearance, a very moderate feeding at this time would be advisable.

On the other hand, fertilizing a lawn that already had moderate vigor at the time most of us get "spring gardening fever" will stimulate excessive, succulent growth. Excessive leaf growth usually occurs at the expense of new root growth; this places the plant at a further disadvantage for summer and needlessly increases the amount of mowing required. Turf becomes more susceptible to disease and other stresses that will take their toll during summer.

Nitrogen fertilizer

These materials fall into two basic groups: soluble and slow-release. Soluble types are available quickly to plants even at low temperatures they stimulate rapid growth and are depleted quickly. Steady, uniform growth requires frequent, light applications. Slow-release types of several different forms release nutrients to plants over a long period of time.

Lawn specialty fertilizers often contain 24 to 50 percent of the total nitrogen in slow-release form and the remainder in quickly soluble forms. This combination gives immediate response in cool weather while the remainder is available over a longer period.

When 35 to 50 percent or more of the nitrogen is a slow-release type, rates may be increased up to 50 percent. With these fertilizers, frequency of application may sometimes be reduced.

A precaution should be observed: Nitrogen sources from urea (quickly soluble) should not be confused with urea-formaldehyde, UF, (slowly available).

Rates and Frequency

Recommendations are usually based on amounts required to supply a given amount of nitrogen per 1,000 square feet of lawn. Most lawn fertilizers are "complete" in that they contain the three major nutrients: nitrogen (N), phosphorus (P) and potassium (K) and, therefore, the amount of phosphorus and potassium applied is determined by the ratio of these two elements to nitrogen.

Two fertilizers with label analyses of 20-5-10 and 12-12-12 would contain 20 and 12 percent N, 5 and 12 percent P, and 10 and 12 percent K, respectively. For the first fertilizer, the N:P:K ratio would be 4:1:2, and the second would be 1:1:1. The amount of fertilizer required to apply 1 pound nitrogen to 1,000 square feet can be calculated by dividing 100 by the percentage of nitrogen in the fertilizer (100 4 20 = 5 pounds fertilizer per 1,000 sq. ft.).

Suggested Annual Fertilization Schedule

For routine maintenance where soil test or experience indicates no major deficiencies, use a lawn fertilizer with an approximate ratio of 3:1:1 or 4:1:1